

I Claim:

1. A vehicle wheel balancer for obtaining data relative to the imbalance of a vehicle wheel, said wheel balancer comprising:

- (a) a centering shaft having a free end adapted for extending through a center hole of the wheel, and a proximal end opposite the free end;
- (b) means for rotating said centering shaft;
- (c) a locating hub carried on said shaft and adapted for engaging a first side of the wheel to locate the wheel on said balancer;
- (d) a centering sleeve carried on said shaft adjacent said locating hub, and adapted for extending through the center hole of the wheel to center the wheel relative to said shaft;
- (e) means for locking said centering sleeve to said wheel balancer, such that said centering sleeve remains secured to said wheel balancer upon removal of the wheel from said shaft; and
- (f) a mounting member carried on said shaft and adapted for engaging a second side of the wheel, the wheel being sandwiched between said mounting member and said locating hub such that said mounting member, locating hub, and centering sleeve cooperate to secure the wheel in a centered position relative to said shaft during wheel-balancing rotation of the wheel.

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2. A vehicle wheel balancer according to claim 1, wherein said locating hub comprises an annular face plate adapted for engaging the wheel, and an integrally-formed cup defining an internal cavity for receiving a portion of said centering sleeve.
3. A vehicle wheel balancer according to claim 2, and comprising a spring positioned within the cavity of said locating hub, and adapted for urging said centering sleeve into the center hole of the wheel.
4. A vehicle wheel balancer according to claim 3, and comprising a floating spring cover movable within the cavity of said locating hub and residing between said spring and centering sleeve.
5. A vehicle wheel balancer according to claim 4, wherein said means for locking said centering sleeve to said wheel balancer comprises a locking bolt extending outwardly from said centering sleeve towards said floating spring cover, and wherein said floating spring cover defines an opening therein for receiving and holding a free end of said locking bolt to secure said centering sleeve to said wheel balancer.

6. A vehicle wheel balancer according to claim 5, wherein said locking bolt comprises an enlarged head, and wherein the opening in said floating spring cover comprises an enlarged portion adapted for receiving the head of said bolt therethrough and a narrow portion communicating with the enlarged portion, whereby after inserting the bolt head through the enlarged portion of said opening, said centering sleeve is rotated to locate the bolt head along the narrow portion of said opening such that said bolt head engages said floating spring cover to lock said centering sleeve to said wheel balancer.

7. A vehicle wheel balancer according to claim 1, wherein the free end of said centering shaft comprises an external screw thread.

8. A vehicle wheel balancer according to claim 7, and comprising a wing nut applied to the free end of said centering shaft, and having a complementary internal screw thread mating with the external thread of said centering shaft to releasably secure the wheel between said locating hub and mounting member.

9. A wheel centering assembly for a vehicle wheel balancer adapted for obtaining data relative to the imbalance of a vehicle wheel, said wheel centering assembly comprising:

- (a) a centering shaft having a free end adapted for extending through a center hole of the wheel, and a proximal end opposite the free end;
- (b) a locating hub carried on said shaft and adapted for engaging a first side of the wheel to locate the wheel on said balancer;
- (c) a centering sleeve carried on said shaft adjacent said locating hub, and adapted for extending through the center hole of the wheel to center the wheel relative to said shaft;
- (d) means for locking said centering sleeve to said wheel balancer, such that said centering sleeve remains secured to said wheel balancer upon removal of the wheel from said shaft; and
- (e) a mounting member carried on said shaft and adapted for engaging a second side of the wheel, the wheel being sandwiched between said mounting member and said locating hub such that said mounting member, locating hub, and centering sleeve cooperate to secure the wheel in a centered position relative to said shaft during wheel-balancing rotation of the wheel.

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10. A wheel centering assembly according to claim 9, wherein said locating hub comprises an annular face plate adapted for engaging the wheel, and an integrally-formed cup defining an internal cavity for receiving a portion of said centering sleeve.
11. A wheel centering assembly according to claim 10, and comprising a spring positioned within the cavity of said locating hub, and adapted for urging said centering sleeve into the center hole of the wheel.
12. A wheel centering assembly according to claim 11, and comprising a floating spring cover movable within the cavity of said locating hub and residing between said spring and centering sleeve.
13. A wheel centering assembly according to claim 12, wherein said means for locking said centering sleeve to said wheel balancer comprises a locking bolt extending outwardly from said centering sleeve towards said floating spring cover, and wherein said floating spring cover defines an opening therein for receiving and holding a free end of said locking bolt to secure said centering sleeve to said wheel balancer.

14. A wheel centering assembly according to claim 13, wherein said locking bolt comprises an enlarged head, and wherein the opening in said floating spring cover comprises an enlarged portion adapted for receiving the head of said bolt therethrough, and a narrow portion communicating with the enlarged portion, whereby after inserting the bolt head through the enlarged portion of said opening, said centering sleeve is rotated to locate the bolt head along the narrow portion of said opening such that said bolt head engages said floating spring cover to lock said centering sleeve to said wheel balancer.

15. A wheel centering assembly according to claim 9, wherein the free end of said centering shaft comprises an external screw thread.

16. A wheel centering assembly according to claim 15, and comprises a wing nut applied to the free end of said centering shaft, and having a complementary internal screw thread mating with the external thread of said centering shaft to releasably secure the wheel between said locating hub and mounting member.

17. A centering sleeve adapted for extending through a center hole of a vehicle wheel mounted on a vehicle wheel balancer to center the wheel relative to a rotatable balancer shaft, said centering sleeve comprising means for locking said sleeve to the wheel balancer, such that said sleeve remains secured to the wheel balancer upon removal of the wheel from the balancer shaft.

18. A centering sleeve according to claim 17, and comprising an enlarged base adapted for engaging a floating spring cover movable within a cavity defined by a locating hub of the wheel balancer.

19. A centering sleeve according to claim 18, wherein said means for locking said centering sleeve to the wheel balancer comprises a locking bolt extending outwardly from said base, and adapted for being inserted and held within an opening formed with the floating spring cover to secure said centering sleeve to the wheel balancer.

20. A method for balancing a vehicle wheel, comprising the steps of:
- (a) mounting the wheel on a vehicle wheel balancer comprising a rotatable shaft;
 - (b) centering the wheel relative to the shaft using a centering sleeve extending into a center hole of the wheel;
 - (c) with the wheel mounted and centered, rotating the shaft to obtain data relative to the imbalance of the wheel; and
 - (d) after the data is obtained, removing the wheel from the wheel balancer while simultaneously dislodging the centering sleeve from the wheel hole.